

Outline

1. Groups
 - (a) Subgroups, Cosets, Lagrange's Theorem.
 - (b) Permutations, Group Actions, Burnside's Lemma.
 - (c) Normal subgroups, Isomorphism Theorems.
 - (d) Direct Products, Abelian groups, Fundamental Theorem of Finite Abelian Groups
2. Rings
 - (a) Subrings, Domains, Fields.
 - (b) Ideals, factor rings, Isomorphism Theorems.
 - (c) Prime and Maximal ideals.
 - (d) Polynomial Rings, factorization, UFDs and EDs,
3. Fields
 - (a) Vector space.
 - (b) Extension Fields, splitting fields, zeros of polynomials.
 - (c) Algebraic Extensions, Structure and Classification of Finite fields.

References:

J.A. Gallian, *Contemporary Abstract Algebra*, Heath and Company, 1990.

I.N. Herstein, *Abstract Algebra*, Macmillan, 1986.

J.R. Durbin, *Modern Algebra An Introduction*, Wiley, 1992.